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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,587	02/24/2004	Masao Noro	308455 H8072US	3201

7590 03/18/2009
Pillsbury Winthrop LLP
Intellectual Property Group
Suite 2800
725 South Figueroa Street
Los Angeles, CA 90017-5406

EXAMINER

PAUL, DISLER

ART UNIT	PAPER NUMBER
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2614

MAIL DATE	DELIVERY MODE
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03/18/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/785,587	Applicant(s) NORO ET AL.	
	Examiner DISLER PAUL	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The applicant's amended has been fully considered and are unpatentable over prior art
(please see office action below).

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8; 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US 6,181,796,B1) and krochmal et al. (US 2004/0008848 A1) and Hoover et al. (US 2002/0131611 A1).

Re claim 8, Johnson disclose of a speaker array system comprising: N driving circuits, N being of an integer; and a plurality of N speakers arranged in an array (fig.5 (R,L, 118R, 118L)/array of speakers, wherein N=2), each of the N speakers being a first speaker or a second speaker in pairs of speakers, each first speaker being positioned adjacent to the second speaker in the pairs of speakers, each of the N speakers having two terminals, one of the two terminals being coupled to a corresponding one of the N driving circuits and the other of the two terminals being connected together in the speaker array system (fig.5-6(R,L); 218); col.3 line 30-35/speakers with terminals at driving circuits and connected together respectively of the pair of speakers).

However, Johnson failed to disclose of the specific wherein the two terminals being connected together so that N + 1 wirings are utilized in the system. But, Krochmal et al. disclose of a similar concept wherein the two terminals being connected together so that certain wiring are utilized (fig.1 (19); fig.3 (19); par [0017]/plurality of terminals interconnected and wiring) Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combinations with the concept wherein the two terminals being connected together so that certain wiring are utilized for detecting proper interconnection of speakers and audio quality in the automotive audio system.

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While, the combined teaching of Johnson and Krochmal et al. as a whole, fail to disclose of the specific wherein that $N + 1$ wirings are utilized. But, is it noted having such concept wherein specifically $N + 1$ wirings are utilized is simply the designer's need with no unexpected result produced. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combined teaching of Johnson and Oki et al. as a whole, with the specific wherein that $N + 1$ wirings are utilized for providing current flow through the terminals.

the combined teaching of Johnson and Krochmal et al. as a whole, further disclosed of wherein in each pair of speakers, the one terminals coupled to the driving circuits have opposite polarity, and the first speaker receives a first driving signal at the one terminal from the corresponding one of the N driving circuits and outputs a first current signal at the other terminal, and the second speaker receives a second driving signal, having an inverse phase and a predetermined delay relative to the first driving signal, at the one terminal from the corresponding one of the N driving circuits and outputs a second current signal at the other terminal so that a magnitude of a sum of the first current signal and the second current signal is determined by a magnitude of the predetermined delay (fig.5-6 (218,120); col.3 line 1-12; col.5 line 45-55; col.2 line 35-50/delay of one terminal output with respect to the other and phase inverted and net of current produced as in fig.5-6 (218); col.2 line 10-25).

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While, the combined teaching of Johnson and Krochmal et al. as a whole of the N being equal to 2 speakers and corresponding N-driving circuits (left and right channels), But, the combined teaching of Johnson and Krochmal et al. as a whole, fail to disclose of the specific wherein the N driving circuits being an integer equal to or greater than 4. But, Hoover et al. disclose of a similar concept wherein having such N driving circuits being an integer equal to or greater than 4 (fig.2 (24-32); fig.3; par [0017-0018]- in addition to left and right the rear left and rear right is envisage / driving circuits of multiple in pairs). Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with the concept wherein having such N driving circuits being an integer equal to or greater than 4 for generating surround sound signals of all the environment in mimicking attendance of a performance in an auditorium.

Re claim 10, the speaker array system according to claim 8, wherein the inverse phase is provided by an inverting amplifier (fig.5-6(120); col.3 line 15-25).

Re claim 11, the speaker array system according to claim 8, but the combined teaching of Johnson and Krochmal et al. and Hoover et al. as a whole, fail to disclose of wherein the array is a two dimensional array. But, it is noted having such an arrangement wherein the array is a two dimensional array is simply the designer's preference. Thus, it would have been obvious to have modified the combination with having the array is a

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two dimensional array for drawing low peak current from supply while amplifying the surround channels signals with highly correlated frequency components.

RE claim 12, the speaker array system according to claim 8, wherein the others of the two terminals connected together are connected to ground (fig.5-6 (216-Ground)).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US 6,181,796,B1) and Krochmal et al. (US 2004/0008848 A1) and Hoover et al. (US 2002/0131611 A1) and further in view of Weinreich et al. (US 6,263,083).

Re claim 9, the speaker array system according to claim 8, but the combined teaching of Johnson and Krochmal et al. and Hoover et al. as a whole, failed to disclose of the predetermined delay is used to cause an acoustic lens effect. But, Weinreich disclose of an array of speakers with predetermined delay is used to cause an acoustic lens effect (fig.3 wt (64)/array speakers with each driving signals with phase delay). Thus, it would have been obvious for one of the ordinary skill in the art to have modify the combination with the predetermined delay is used to cause an acoustic lens effect for purpose of simulating the complex directional patterns of sound anywhere in room.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2614

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614